

TABLE 3.—Record of rainfall in New Orleans, La., since establishment of drainage rain gages in 1894.

Year and average up to date.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Annual monthly average.	Year.	Departure from 10-year average—51.55.
	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.	Amount.	Total to date.			
1894	2.11	13.27	15.38	4.48	19.86	4.27	24.13	2.36	26.49	4.10	30.59	8.15	38.74	7.46	46.20	1.37	47.57	0.76	48.33	1.19	49.52	1.94	51.46	4.29	1894	-0.09	
1895	7.65	3.76	11.41	3.63	15.04	2.48	17.52	10.38	27.90	10.48	38.38	6.97	45.35	7.32	52.67	1.77	54.83	1.82	56.15	0.88	57.03	4.80	61.83	5.15	1895	+10.28	
1896	4.88	8.92	13.40	4.05	17.45	3.37	20.82	6.37	27.19	7.23	34.48	7.56	42.04	6.37	49.43	2.76	51.20	1.04	52.04	1.04	53.28	3.37	56.65	4.52	1896	+2.70	
Aver...	2.52	8.07	10.79	3.27	10.86	3.55	14.11	5.23	17.32	8.61	26.83	6.23	33.16	6.27	39.44	3.79	40.24	6.60	46.95	3.73	50.66	3.39	54.25	4.10	1897	-2.81	
1897	4.09	6.70	10.79	4.36	15.25	3.34	18.59	5.23	23.87	8.61	31.93	6.23	33.56	6.27	39.44	3.11	47.55	2.92	50.47	1.93	52.40	3.44	55.84	4.10	1897	-2.81	
Aver...	2.02	6.10	7.12	3.38	12.50	3.37	18.07	0.98	18.65	6.21	24.86	4.90	28.46	3.56	33.32	3.85	37.17	3.76	40.93	3.22	44.15	5.09	49.24	4.10	1898	-2.81	
1898	3.57	5.30	8.87	4.69	14.55	3.20	13.46	4.11	22.57	7.60	30.17	5.69	36.06	6.59	41.65	3.30	44.95	3.14	46.08	2.35	50.34	3.35	54.19	4.62	1898	+3.91	
Aver...	2.00	7.80	9.30	1.23	10.53	3.20	13.73	0.10	13.83	3.56	17.39	5.70	23.09	3.48	28.57	16.01	44.88	1.50	46.08	3.06	52.40	3.06	55.46	4.62	1899	+3.91	
1899	3.26	6.50	9.76	4.00	13.76	3.75	17.51	3.31	20.82	6.79	27.61	5.96	33.47	5.57	39.04	6.84	44.88	2.81	47.69	3.06	50.75	3.70	54.45	3.05	1899	-14.93	
Aver...	2.61	3.43	6.04	2.89	8.93	1.68	10.61	0.15	10.76	9.62	20.38	3.70	26.05	3.01	29.09	0.89	29.48	1.69	31.17	2.02	33.19	3.43	36.62	3.05	1900	+12.55	
1900	3.88	5.99	9.87	4.50	14.37	12.29	26.66	3.38	30.04	6.78	36.82	6.32	45.24	4.98	50.22	3.63	53.85	2.53	56.38	1.28	57.66	6.44	64.10	5.34	1900	+12.55	
Aver...	3.25	5.99	9.24	3.91	13.15	4.68	17.83	2.87	20.70	7.19	27.89	6.20	34.09	6.12	39.21	4.74	43.95	2.61	46.56	2.66	49.22	4.05	53.27	4.50	1901	+2.88	
1901	3.33	5.72	9.05	3.81	12.86	7.75	20.61	1.79	22.40	3.56	25.96	9.42	35.38	4.99	40.37	3.24	43.61	3.25	46.86	2.59	49.39	4.54	53.83	4.50	1901	+2.88	
Aver...	3.26	5.95	9.21	3.90	13.12	5.06	18.17	2.73	20.61	6.74	27.64	6.61	34.25	5.10	39.35	4.56	43.91	2.69	46.50	2.64	49.24	4.12	53.36	3.16	1902	-13.62	
1902	0.75	3.82	8.89	8.16	3.41	11.57	11.57	2.04	13.61	1.21	14.82	2.51	17.33	3.21	20.54	5.93	26.47	2.38	28.85	3.25	32.10	5.83	37.93	3.16	1902	-13.62	
Aver...	2.98	6.70	8.68	3.90	12.58	4.68	17.46	1.46	20.11	6.12	26.23	6.15	32.38	4.89	37.27	4.71	41.98	2.65	44.63	2.72	47.35	4.30	51.65	4.22	1903	-0.84	
1903	3.94	9.81	13.75	11.77	25.62	0.66	26.18	1.87	27.55	3.94	31.49	6.37	38.06	5.79	43.86	2.47	46.82	0.80	46.92	0.21	47.33	3.58	50.71	4.22	1903	-0.84	
Aver...	3.08	6.10	9.13	4.68	13.86	4.45	10.55	2.53	20.83	5.90	26.75	6.19	32.94	4.93	37.92	4.49	42.41	2.45	44.86	2.46	47.32	4.23	51.55	3.25	1904	-12.51	
1904	3.15	1.59	4.74	4.04	8.78	1.77	10.32	3.83	14.38	3.87	18.25	6.30	24.85	5.57	30.42	3.40	33.82	1.14	34.96	1.60	36.56	2.48	39.04	3.25	1904	-12.51	
Aver...	3.09	5.63	8.73	4.63	13.40	4.21	17.61	2.64	20.26	5.73	25.93	6.23	32.21	5.04	37.25	4.39	41.64	2.53	43.96	2.38	46.34	4.07	50.41	3.25	1904	-12.51	

TABLE 2.—Record of precipitation at various stations—Continued.

Average of all stations (6) for month of December, 1904..... 2.48
 Average of all stations east of river (5) for month of Dec. 1904... 2.52
 Monthly average of all stations for 1904, 12 months..... 3.25

Average of all stations for the month of December, as compared with averages of past four years.			Average of all stations for the year 1904, as compared with averages of past four years.		
1904	2.48	0.00	1904	39.05	0.00
1903	3.58	1.10	1903	50.71	11.60
1902	5.83	3.35	1902	37.93	1.12
1901	4.54	2.06	1901	53.93	14.88
1900	6.44	3.96	1900	64.10	25.05

Total rainfall for 1904 as compared with average total of past ten years.
 1904..... 39.05 0.00
 Ten years average, 51.55 — 12.50

The accompanying record of rainfall, Table 3, is the tabulation of rainfall for the eleven years previous to December 31, 1904.

(1) This record shows the monthly rainfall and total for any given number of months each year, by reading from left to right.

(2) The total rainfall per annum and the average monthly rainfall.

(3) The average rainfall for each month in any given number of years.

(4) The average total in any given number of months in any given number of years.

(5) The average annual rainfall for any given number of years.

(6) The excess or deficit as compared with ten years average, to 1902, inclusive.

CANADIAN SEISMOGRAPHIC RECORDS.

By Prof. R. F. STUPART, Director Canadian Meteorological Service.

During the month of April the seismograph at Toronto showed disturbances on eight days and that at Victoria, B. C., on nine days. Of these disturbances only that on the 4th was pronounced, the others being very small.

The record of the 4th was that of the great earthquake in India, and is well marked on both traces, fig. 1, Toronto, and fig. 2, Victoria, but the movement was greater at Toronto. The preliminary tremors were registered by both instruments at practically the same instant as were also the large waves, but the maximum movement was recorded at Toronto about three minutes earlier than at Victoria. The duration of disturbance as registered at Toronto was 3^h 25.8^m, and at Victoria 3^h 26.3^m.

TABLE 1.—Register from Toronto, Canada.

P. T. = preliminary tremors. L. W. = large waves. Time is Greenwich civil time, given in hours, minutes, and decimals of minutes; 0 or 24 H = midnight.
 Scale value—one millimeter of displacement of outer end of boom = a tilt of 0.67".

No.	Date, 1905.	P. T. Commence.	L. W. Commence.	Max.	End.	Max. Amplitude.	Duration.	Remarks.
570	April 4	h. m.	h. m.	h. m.	h. m.	mm.	h. m.	
571	April 12	1 14.2	1 50.2	1 54.3	4 40.0	4.0	3 25.8	Moderate, India. Very slight thickening.
572	April 16	17 32.0	.....	.....	17 39.0	0.1	0 7.0	Do.
573	April 19	13 00.0	.....	.....	14 20.0	0.15	1 20.0	Marked and extended thickening.
574	April 25	17 49.3	.....	.....	17 57.1	0.1	0 7.8	Slight thickening, Persia.
575	April 26	5 51.1	.....	.....	5 58.1	0.1	0 7.0	Do.
576	do	22 2.3	.....	.....	22 48.0	0.25	0 45.7	Very small, began abruptly.
577	April 28	17 9.5	.....	.....	17 32.7	0.15	0 23.2	Thickening.
578	May 9	6 53.2	.....	6 58.3	7 47.3	0.90	0 54.1	Small, southern Mexico.
579	May 11	17 35.5	.....	.....	18 20.3	0.05	0 44.8	Minute and extended thickening.
580	May 12	3 13.8	.....	.....	3 19.8	0.05	0 6.0	Minute thickening.

P.T. 1-14.2 L.W. 1-50.2 MAX 1-54.3		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	
P.T. 1-14.0 L.W. 1-50.3 MAX 1-57.1		Semi Amp. Time 23 4.0 mill.		Monday April 3 rd 1905.	

TABLE 2.—Register from Victoria, B. C.

Scale value—one millimeter of displacement of outer end of boom = a tilt of 0.76'.

No.	Date, 1905.	P. T. Com- mence.		L. W. Com- mence.		Max.		End.		Max. Am- pli- tude.	Duration.	Remarks.	
		<i>h.</i>	<i>m.</i>	<i>h.</i>	<i>m.</i>	<i>h.</i>	<i>m.</i>	<i>h.</i>	<i>m.</i>	<i>mm.</i>	<i>h.</i>	<i>m.</i>	
583	April 4	1	14.0	1	50.3	1	57.1	4	40.3	6.3	3	26.3	Large, began ab-
584	April 12	3	3.0	.....	.....	.....	.....	3	9.0	0.1	0	6.0	ruptly, India.
585	April 16	17	30.8	.....	.....	.....	.....	17	40.8	0.1	0	10.0	Brief thicken-
586	April 19	12	44.6	.....	.....	12	56.0	14	10.5	0.15	1	25.9	ing. Slight thicken-
587	April 23	23	22.6	.....	.....	.....	.....	23	32.0	0.15	0	9.4	ings. Thickenings,
588	April 24	24	46.3	.....	.....	.....	.....	0	52.3	0.10	0	6.0	quiet intervals.
589	April 22	13	0.4	.....	.....	13	9.4	13	18.4	0.4	0	18.0	Thickenings. Very slight
590	April 26	6	4.4	.....	.....	.....	.....	6	8.4	0.1	0	4.0	thickening. Marked thicken-
591	do	21	55.0	.....	.....	.....	.....	23	40.0	0.1	1	45.0	ing. By slight thicken-
592	May 9	6	58.6	.....	.....	7	2.6	7	42.6	0.55	0	44.0	ing. Brief thickening
593	May 11	17	23.4	.....	.....	.....	.....	18	28.4	0.1	1	5.0	at intervals. Very small,
													southern Mex-
													ico. Extended and
													minute thicken-

SUPPLYING MOISTURE IN CONNECTION WITH ARTIFICIAL HEATING.

By Mr. G. A. LOVELAND, Section Director.

In the report for April, of the Nebraska Climate and Crop Service, Mr. G. A. Loveland, Section Director, writes as follows:

In the absence of more accurate data in the matter of the cost of supplying moisture in artificial heating a few estimates have been made from the experience of four winters in supplying moisture to a dwelling house.

In southeastern Nebraska, with a difference between the inside and outside temperature of from 35° to 50° as is usually the case in winter, from 20 to 40 quarts of water should be evaporated daily in a dwelling house containing 14,000 cubic feet. Experience has shown that this does not increase the relative humidity by more than 10 per cent, nor maintain it above 35 per cent in the house, while that of the outside air is from 60 to 75 per cent.

Experience also seems to indicate that the relative humidity inside the house should not exceed 40 per cent at the most and probably should not exceed 35 per cent in an ordinary dwelling house in winter, else the condensation on the windows will be sufficiently great to be very troublesome. However, the increase of 10 per cent makes a material difference in the feeling of the air. Double windows throughout the house would probably allow a decidedly greater increase in relative humidity without inconvenience.

To evaporate 20 to 40 quarts of water would require 43,000 to 86,000 units of heat (British thermal units) or a very approximate estimate of 3 to 7 pounds of anthracite coal.

In actual experience the temperature of the room was maintained nearly as high with the added moisture as though it had been dry. Certainly the difference did not exceed 2° on the average. The number of units of heat required to evaporate the 20 quarts of water, 43,000, would be sufficient to raise the temperature of the air in the dwelling house, 14,000 cubic feet, 2° and allow for a complete change of air three and one-half times each hour. This is in excess of the probable number of times such change occurs. The slightly additional expense required to increase the moisture in a room is fully compensated by the improvement in comfort and health.